



**{In Archive} Fw: Cinco MUD WER Study - TPDES 13558 - Proposed e-mail**

**Nelly Smith** to: JGodeaux

03/23/2009 03:42 PM

Cc: Diane Evans

From: Nelly Smith/R6/USEPA/US  
To: JGodeaux@tceq.state.tx.us,  
Cc: Diane Evans/R6/USEPA/US@EPA

Archive: This message is being viewed in an archive.



Hardness Normalization Calculations.xls EPA\_Cinco\_WER-Vols (#2).xls TRIMMED SPEARMAN.doc

Hi Jason:

I think the most significant issue in the WER study is our comment related to the data inversion (or possible sample-switching error) for several treatments for Study No 2. As we mentioned in our e-mail, the dissolved metal concentration at the end of 48 hr increased by more than 10 % from test initiation (please see our original spreadsheet: treatments 5, 6, 7, and 9).

After several conversations with Diane Evans and Steve Bainter, we decided that the best option here is to recalculate the LC50 for the simulated downstream water (Study No 2) using TRIMMED SPEARMAN-KARBER METHOD with the initial dissolved copper concentrations instead of the average copper concentration. We have attached a copy of the LC50 calculation (216.26 ug/L), its normalization (179.31 ug/L) and Final WER calculation (7.2628) for dissolved copper. Please see attached documents.

Please let us know if you have any comments regarding our approach. I will be out of the office the rest of this week, but I will be back on Monday next week.

Thanks,

Nelly Smith (6WQ-EW)  
Watershed Management Section  
Water Quality Protection Division  
US EPA Region 6  
1445 Ross Ave.  
Dallas TX 75202

(214) 665-7109  
(214) 665-6689 Fax

----- Forwarded by Nelly Smith/R6/USEPA/US on 03/23/2009 02:24 PM -----



**RE: Fw: Cinco MUD WER Study - TPDES 13558**

**Home, Jim** to: Jason Godeaux, Nelly Smith

01/23/2009 12:33 PM

Cc: "Wolfe, Jim", david.dow, jennifer.hundl

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Jason and Nelly,

Thanks for the opportunity to shed some light on the issues raised in Nelly's email to Jason. My responses are provided below (in red) along with the original questions/comments. Please forgive my tardiness in responding, but this was the wheel that didn't squeak for quite a while.

**James D. Horne**

Technical Director | PBS&J Environmental Toxicology Laboratory  
713.977.1500 Ext. 113

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**From:** Jason Godeaux [mailto:JGodeaux@tceq.state.tx.us]  
**Sent:** Tuesday, January 06, 2009 12:54 PM  
**To:** Horne, Jim  
**Subject:** Fwd: Fw: Cinco MUD WER Study - TPDES 13558

Jim,

Diane Evans contacted me today and inquired about this WER. I sent this e-mail back in September and I don't have a record of a response. If you could look over the questions that were sent to us by EPA below regarding the WER that was conducted, I would appreciate it.

Thank You,

Jason

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Jason Godeaux, Aquatic Scientist  
Water Quality Division, MC 150  
Texas Commission on Environmental Quality  
PO Box 13087  
Austin, TX 78711-3087  
(512) 239-2495 (phone)  
(512) 239-4420 (fax)

>>> Jason Godeaux 9/24/2008 4:33 PM >>>  
Jim,

I received this e-mail from EPA and I was wondering if you could respond to their questions.

Thank You,

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Jason Godeaux, Aquatic Scientist  
Water Quality Division, MC 150  
Texas Commission on Environmental Quality  
PO Box 13087  
Austin, TX 78711-3087  
(512) 239-2495 (phone)

(512) 239-4420 (fax)

>>> <Smith.Nelly@epamail.epa.gov> 9/22/2008 2:40 PM >>>

Hi Jason:

Please see below info, it appears that you did not receive my original e-mail.

Nelly Smith

----- Forwarded by Nelly Smith/R6/USEPA/US on 09/22/2008 02:36 PM -----

Nelly	
Smith/R6/USEPA/U	
S	To
	jgodeaux@tceq.state.tx.us
09/22/2008 02:30	cc
PM	Diane Evans/R6/USEPA/US@EPA
	Subject
	Cinco MUD WER Study - TPDES 13558

Hi Jason:

I have finished reviewing the referenced WER, and we have some questions for you:

Analysis for total recoverable and dissolved copper:

According to the Work Plan, analyses for total and dissolved copper will be measured by inductively-couple plasma mass spectroscopy (ICP-MS, EPA Method 6020). The Work Plan references a detection limit of approximately 0.13 ug/L. EPA Method 6020 indicates that the detection limits is around 0.02 ug/L. The laboratory test results (STL Analytical Report) indicate that the lowest reporting limit used was 10 ug/L. They should have a lower reporting limit to detect concentrations below 10 ug/L, according to the workplan. I think this is important since they eliminated some data from the study No 1 (see Appendix D: Statistical Analyses). Although the elimination of data from the lab water tests does not affect the calculation of the WER (SMAV was higher than lab water LC50), could the facility or its consultants address the question on different values used in the workplan v. the study?

I believe that the decision to analyze copper-spiked test solutions by EPA Method 6010B (ICP), instead

of EPA Method 6020 (ICP-MS) as stated in the work plan, was based on resource availability (analytical system) within the laboratory network at the time samples were submitted for analysis. Although some information was lost due to the "non-detects", the net result is not changed because of the flat-response at the lowest test concentrations.

Study No 1, sample collected on May 2007:

The nominal concentrations on Table 4 on Page 8 (adobe page 12) of the Report do not match with the information provided by the Lab (PBS & J) on Appendix B (Bio-assay data Sheet - adobe page 23) and the summary table of Appendix D (Statistical Analysis - adobe page 243).

Table 4 (adobe page 12) was constructed from a template table and not well-edited; the 1<sup>st</sup> column in the body of the table, beginning with nominal concentration "25", should have started with "36" and ended with "619". The rest of the data presented in Table 4 is correct and in agreement with data presented in the bioassay records (adobe page 23) and the statistical summary (adobe page 243).

Study No 2, sample collected on Sep 2007:

From our check list, the dissolved metal concentration at the end of 48 hr should not increase by more than 10% from test initiation. Please see attached spread sheet- Table 1 and 2 where we calculated this value. Our concern is in the simulated downstream water samples of study #2, where large increases of dissolved copper were found in the higher concentrations. There was also a 36% increase in total copper in one of the concentrations. These increases are found in the concentrations which bracket the LC50 results for the simulated downstream water.

(See attached file: Dissolved Cu calculation.xls)

There is an apparent inversion, either in the measured initial concentrations or the measured final concentrations, for treatments #7 and #8; the reason for this anomaly can not be confirmed, but most likely was due to a sample-switching error. The error may have happened at the PBS&J laboratory or at the STE (now TestAmerica) laboratory – we simply don't know.

If one pair of the values (either initial or final) is inverted from the positions as shown in the report, the percent-differences would be less than 10%. Finally, the calculated LC50 for total copper would change, but only slightly (using the logical inversion where 300 and 416 are transposed, the LC50 changes from 265.75 to 272.31 µg/L); the total copper WER also would change slightly (again using the logical transposition, from 9.1811 to 9.4077).

Finally, the bracketing of the responses is real, and has more to do with the properties of the simulated downstream water; the median response was clearly between 220 µg/L (where no response was recorded) and a little more than 400 µg/L.

Please let me know if you have any questions regarding previous items.

Thanks again,

Nelly Smith (6WQ-EW)  
Watershed Management Section  
Water Quality Protection Division  
US EPA Region 6  
1445 Ross Ave.  
Dallas TX 75202

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(214) 665-6689 Fax